

**REMARKS**

Claims 2-8 are pending.

Claim 3, rejected under §112, is proposed to be canceled. Claim 7 is also proposed to be canceled, and claim 6 is made dependent from claim 2.

Claim 2, also rejected under §112, is proposed to be amended to remove the term "substantially". The proposed amendment to the claim now recites that

the wt% of each of R125, one of either R508A or R508B and R14 is within the range of from 19.8 wt% to 21.8 wt% of the composition.

This is within the range of wt% set forth in claim 8. It is submitted that the proposed amendment overcomes the §112 rejection and better defines the invention.

Claims 2-8 (only claims 2, 4-6 and 8 remain active) stand rejected over the combination of Yuzawa, EP 1136540A1 in view of Singh, et al., WO 02/26913A2 and Lund, et al., U.S. 5,866,029.

The Examiner discusses claim 2 and takes the position that Yuzawa shows all of the components of the refrigerant circuit. This appears to be generally correct from the "hardware" point of view. The Examiner then discusses the refrigerant mixture of this patent and notes that the patent teaches that R508A can be replaced by R508B. He also takes the position that the wt% of the various components of the mixture of Yuzawa and that of the application claims are "substantially the same". But the composition of Yuzawa and claim 2 of the application are not the same.

The Examiner recognizes that Yuzawa does not teach the use of R245fa, and for that he relies upon Singh. He refers to the different types of refrigerants that are disclosed in the Tables of Singh, and takes the position that it would have been obvious to one of ordinary skill in the art to include R245fa in the composition disclosed by Yuzawa since it is well known as a refrigerant that can be used in combination with other refrigerants to form different multi-component refrigerants. While it may be true that various refrigerants can be combined, the Examiner gives no reason for modifying Yuzawa to achieve the composition as set forth in claim 2.

The Examiner more specifically states (lines 9-14 of page 4 of the Action) that it would have been obvious to replace the R600 as taught by Yuzawa with R245fa because it is known in the art that R245fa is significantly less flammable than R600 (butane) or other hydrocarbons, this being taught by the patent to Lund at column 3, lines 21-24.

Applicants respectfully traverse this position. First of all, the Singh reference is basically only a table of various types of refrigerants. The Examiner seems to just pick and choose among these and gives no reason as to why the substitution of R245fa for R600 in Yuzawa should be made.

With respect to the replacement of the R600 of Yuzawa with R245fa of the present invention, this achieves substantial advantages. The boiling point (BP) of R600 is -0.5°C. On the other hand, the boiling point (BP) of R245fa is +15.3°C. There is about 16 degrees difference. Furthermore, R600 (butane) is an HC refrigerant, and it is flammable. On the other hand, R245fa is an HFC refrigerant, and it is inflammable. It is often used as a foaming agent for urethane heat insulation. If anything, R245fa is a substitute refrigerant for R123 or R141b used for urethane heat insulator foaming.

The Examiner's position that the substitution of R245fa for R600 is obvious is incorrect. The two references have different characteristics. As discussed above, there is the difference between the boiling points of R245fa and R600. The Examiner gives no reason as to why Yuzawa would want to use R245fa in his composition and the effect on the resulting compositions if this were done.

The novel composition as set forth in main claim 2 has decided advantages. By using the claimed wt% of R125, R245fa, one of R508A or R508B and R14 as set forth in claim 2, the heat amount of the condensation and evaporation of the refrigerants becomes almost the same. In the specific refrigerant circuit as set forth in claim 5, which uses the refrigerant composition of any of claims 2, 4, 6 and 8, the R125, R508A or R508B and R14 are condensed and evaporate in the second intermediate heat exchanger 13, the third intermediate heat exchanger 15 and the evaporator 17. Therefore, the heat exchange effect in the intermediate heat exchanger becomes stable. Yuzawa does not teach or suggest the composition of claim 2 having the specifically claimed wt%.

Accordingly, claim 2 defines a novel and advantageous composition and should be allowed. Claims 5 and 8 depend from claim 2 and recite further features of the novel composition. These claims also should now be allowed.

Claims 4 and 6, claim 6 now dependent from claim 8, additionally call for the composition to include from 0.1 to 12 wt% of n-pentane. This has a further advantage in that the boiling point of n-pentane is high (+36°C). It does not evaporate in the evaporator and returns to the compressor in liquid style, and evaporates in the compressor. As a result, the temperature of the compressor can be lowered by the evaporation of n-pentane. This provides a further advantage to the composition and a further basis for the allowability of claims 4 and 6.

Accordingly, the remaining claims 2, 4-6 and 8 clearly are patentable and should be allowed.

The amendment should be entered since it clearly places the application in condition for allowance. It does not raise any new issues. The proposed amendment to main claim 2 is basically a transposition of some of the subject matter of claim 8 into the claim. The basic elements of claim 2 are retained.

If the amendment is not entered as placing the application in condition for allowance, then its entry is requested for purposes of appeal.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Prompt and favorable action is requested.

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Respectfully submitted,

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